

# PART SPEC

DESCRIPTION: INVERTER,SIC 1802



SPECIFICATION: 11.5V ~14.5V, ,48KHZ,0 +50 ,BULK



SECTION : DISPLAY R&D

PAGE  
REVISION

|    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|
| 03 | 03 | 02 | 03 | -  | 03 | 03 | 03 | -  | -  | -  |
| 02 | 02 | -  | 02 | -  | 02 | 02 | 02 | 02 | -  | -  |
| 01 | 01 | 01 | 01 | -  | 01 | 01 | 01 | 01 | -  | -  |
| 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |

SHEET 1 2 3 4 5 6 7 8 9 10 11

REVISION

00 01 02 03

DRAWN:

MYUNG-SOO NA

7202



DOC. NO.:

BN44-00038ACB

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CHECKED:

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TOTAL  
PAGE

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APPROVED:

BONG-KYEOM KIM

7196

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SIZE: A4

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# PART SPEC

| REV.                                                                                | DATE       | CONTENTS                                                                                                                                                                                                                                                                                                                                                                                                                                   | DRAWN  | APPROVED |
|-------------------------------------------------------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------|
| 00                                                                                  | 2000.07.10 | initial release                                                                                                                                                                                                                                                                                                                                                                                                                            | M.S NA | B.K KIM  |
| 01                                                                                  | 2000.11.17 | REVISION BY ECO NO:BN020000252<br>* CHANGED Vin RANGE<br>* CHANGED OUTPUT CURRENT(min)<br>* ADDED DIMMING FREQUENCY<br>* CHANGED CN1-7 (5V); NO CONNECTION<br>* ADDED PARTS:Q23,Q24,Q25,D23,C25,R61 ~ R66,R83,R84,R100<br>* DELETED PARTS:R26,53<br>* CHANGED PARTS;C3,C2,R1-R6,R19,R20,R45,R46,R25,R52,<br>R29,R55, C5,C14,C11,C20,R30,R31,R56,R57,R9,R35<br>* CHANGED PCB :REV.01 → REV.1.0<br>* CHANGED CIRCUIT & PATTERN & TRANS SPEC. | M.S NA | B.K KIM  |
| 02                                                                                  | 2001.07.02 | REVISION BY ECO NO: BN020010257<br>* CHANGED PARTS;R30,R56,R31,R57<br>* DELETED Q11,Q18 (MAKER OF KEC)<br>* CHANGED INSULATOR FROM SR50 TO SR55<br>* CHANGED DIMMING FREQUENCY<br>* ADDED PARTS:U5,C30,C31,C50,R69,R70,R79,R85 ~R87<br>R91-R95,R101-R108<br>* DELETED PARTS: Q19,Q21,Q25,D22,D23,C24,R83<br>* CHANGED PARTS:U1,Q4,C2,C10,C12,C21,C19,C25,R5,R6,<br>R28,R29,R30,R31<br>* CHANGED PCB (REV1.0-> 1.5 )<br>* CHANGED CIRCUIT   | M.S NA | B.K KIM  |
| 03                                                                                  | 2001.08.12 | ECO NO : BN020010285 ( REV. 1.5--> 1.0 )<br>( CANCELED ECO NO :BN020010257 )<br>ECO NO:BN02001029D (ADD ADHENSIVE TO C14,C5,C3 )                                                                                                                                                                                                                                                                                                           | M.S NA | B.K KIM  |
|                                                                                     |            |                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |          |
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## PART SPEC

## 1.0 SCOPE

1.1 THIS DOCUMENT DEFINES FOR INVERTER, SIC1802,12.8-15.2V,48KHz

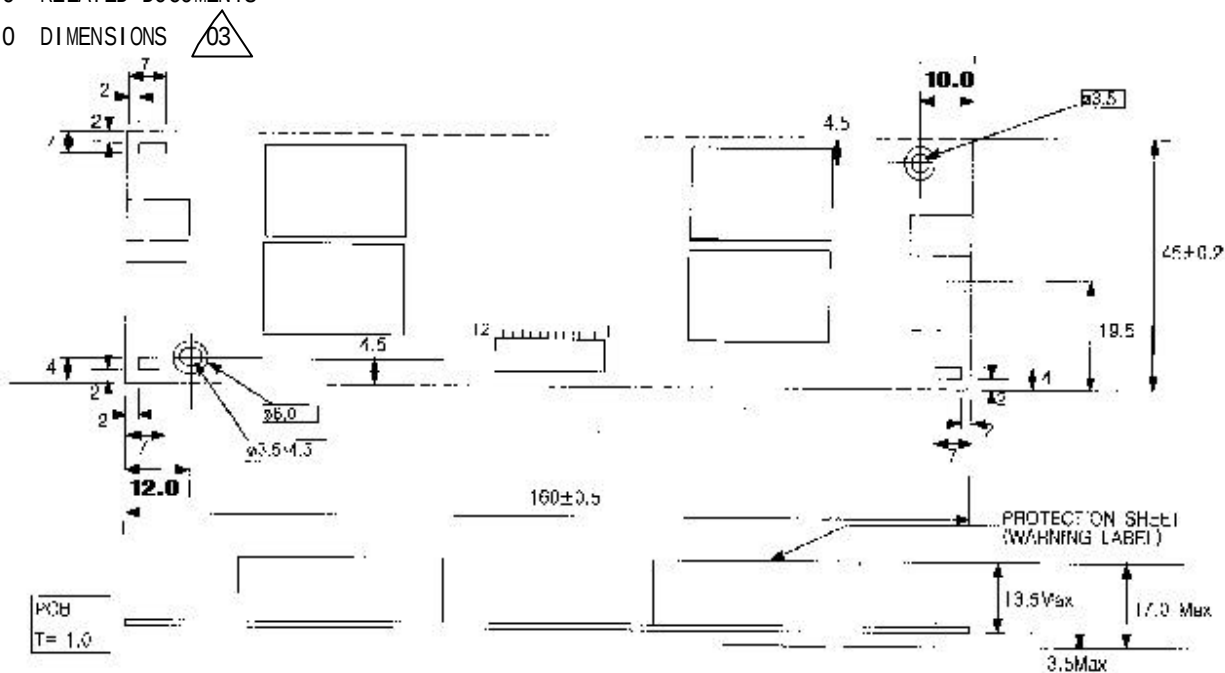
## 1.2 USAGE : BACKLIGHT 4 LAMP CCFL DRIVER INVERTER FOR TX17P0

### 1.3 TYPE OF PACKAGE :

#### 1.4 COATING

## 2.0 RELATED DOCUMENTS

### 3.0 DIMENSIONS



## 4.0 REQUIREMENTS

#### 4.1 MAXIMUM RATINGS

| SYMBOL           | PARAMETER                  | RATING     | UNIT |
|------------------|----------------------------|------------|------|
| V <sub>in1</sub> | input voltage1             | 11.5 ~14.5 | V    |
| V <sub>in2</sub> | input voltage2             | 4.9 ~5.1   | V    |
| T <sub>opr</sub> | operating temperature      | 0 +50      |      |
| T <sub>stg</sub> | storage temperature        | -30 +80    |      |
| H <sub>op</sub>  | operating/storage humidity | 10 ~90     | %RH  |

## 4.2 CONTROL SIGNAL

| PIN NO. | SYMBOL   | STATUS | ACTION          | REMARKS    |
|---------|----------|--------|-----------------|------------|
| CN1 #4  | BKLT -ON | HIGH   | LAMP(CCFL) -ON  | 2.4 -5.25V |
|         |          | LOW    | LAMP(CCFL) -OFF | 0.8V MAX.  |



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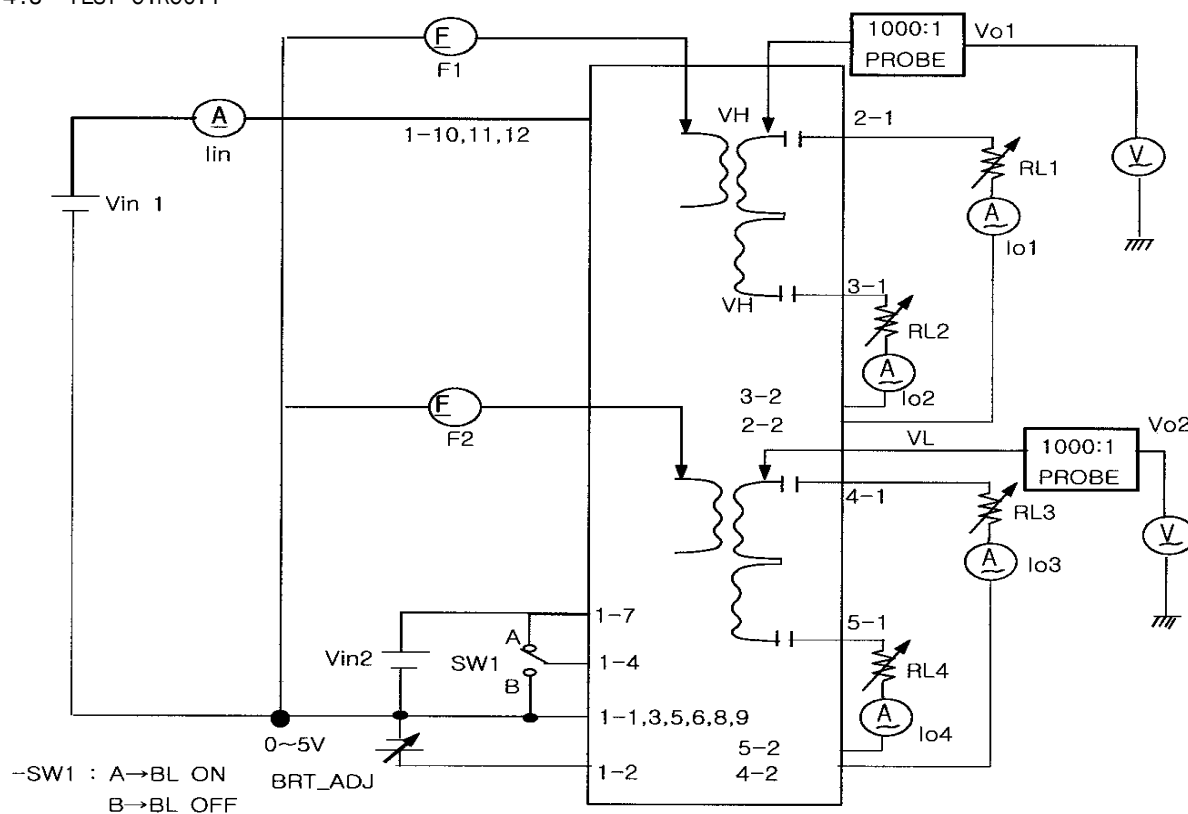
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## PART SPEC

### 4.3 TEST CIRCUIT



#### 4.4 INPUT/OUTPUT CHARACTERISTICS



| ITEM                 | SYMBOL                  | CONDITION                        |                      |          |          | SPECIFICATION |     |     | UNIT   |
|----------------------|-------------------------|----------------------------------|----------------------|----------|----------|---------------|-----|-----|--------|
|                      |                         | V <sub>in1</sub> (V)<br>(DC- IN) | V <sub>in2</sub> (V) | BRT- ADJ | RL(kΩ)   | MIN           | TYP | MAX |        |
| OUTPUT<br>CURRENT    | I <sub>o1,2</sub> (max) | 11.5 ~14.5                       | 5                    | 0V       | 80 ± 0.5 | 6.2           | 6.7 | 7.2 | mA rms |
|                      | I <sub>o1,2</sub> (min) | 11.5 ~14.5                       | 5                    | 5V       | 80 ± 0.5 | 1.5           | 2.5 | 4.0 |        |
|                      | I <sub>o3,4</sub> (max) | 11.5 ~14.5                       | 5                    | 0V       | 80 ± 0.5 | 6.2           | 6.7 | 7.2 |        |
|                      | I <sub>o3,4</sub> (min) | 11.5 ~14.5                       | 5                    | 5V       | 80 ± 0.5 | 1.5           | 2.5 | 4.0 |        |
| INPUT<br>CURRENT     | I <sub>in</sub>         | 14                               | 5                    | 0V       | 80 ± 0.5 |               | 2.1 | 2.2 | ADC    |
| DIMMING<br>FREQUENCY | FD                      | 14                               | 5                    | 0V       | 80 ± 0.5 | 189           | 192 | 195 | Hz     |
| FREQUENCY            | F(1)                    | 14                               | 5                    | 0V       | 80 ± 0.5 | 41            | 48  | 55  | kHz    |
|                      | F(2)                    | 14                               | 5                    | 0V       | 80 ± 0.5 | 41            | 48  | 55  |        |

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### 5.0 FUNCTIONAL PIN DESCRIPTION

#### 5.1 CN1 CONNECTOR 53261-1290(MOLEX)

| PIN NO           | SYMBOL    | REMARK                          |
|------------------|-----------|---------------------------------|
| 2                | BRT_ADJ   | 0 ~ 5V                          |
| 1, 3, 5, 6, 8, 9 | GND       | GND                             |
| 4                | BL ON/OFF | CCFL Drive SIGNAL(Active HIGHT) |
| 7                | VDD       | 5V                              |
| 10, 11, 12       | DC- IN    | DC INPUT Power(14V)             |

#### 5.2 CN2 CONNECTOR: SM02B-BHS-1-TB(JST)

| PIN NO | SYMBOL | REMARK  |
|--------|--------|---------|
| 1      | HOT    | HIGHT 1 |
| 2      | COLD   | LOW     |

#### 5.3 CN3 CONNECTOR :SM02B-BHS-1TB(JST)

| PIN NO | SYMBOL | REMARK  |
|--------|--------|---------|
| 1      | HOT    | HIGHT 1 |
| 4      | COLD   | LOW     |

#### 5.4 CN4 CONNECTOR :SM02B-BHS-1TB(JST)

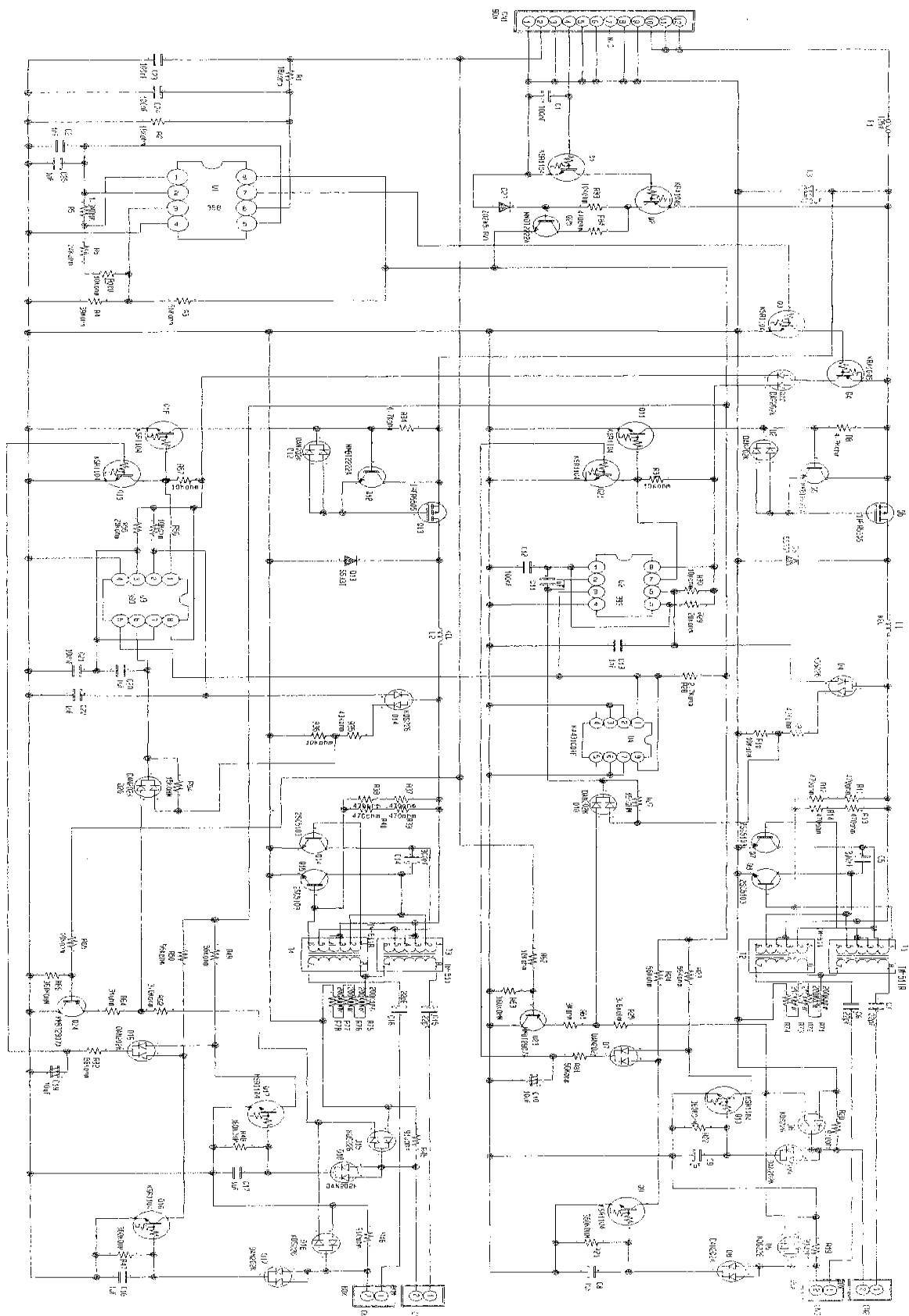
| PIN NO | SYMBOL | REMARK  |
|--------|--------|---------|
| 1      | HOT    | HIGHT 1 |
| 4      | COLD   | LOW     |



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## 6.0 INTERNAL CIRCUIT DIAGRAM



# PART SPEC

## 7.0 PARTS LIST



| SYMBOL                              | NAME    | 1st            |            | 2nd             |         |
|-------------------------------------|---------|----------------|------------|-----------------|---------|
|                                     |         | TYPE NO        | MAKER      | TYPE NO         | MAKER   |
| U4                                  | IC      | KA431CD        | SEC        | TL431CD         | SGS     |
| U1                                  | "       | KA358          | SEC        | BA10358         | ROHM    |
|                                     |         | KIA358         | KEC        | LM358           | T.I     |
| U2,3                                | IC      | KA393          | SEC        | BA10393         | ROHM    |
|                                     |         | KIA393         | KEC        | LM358           | T.I     |
| Q1,3,9,10,11,16,17,<br>Q18,19,21    | TR      | KRC104S        | KEC        | KSR1104         | SEC     |
| Q2,4                                | "       | KRA104S        | KEC        | KSR2104         | SEC     |
| Q5,12,25                            | "       | KST2222A       | SEC        | KTN2222AS       | KEC     |
| Q23,24                              |         | KST2907A       |            | KTN2907AS       |         |
| Q6,13                               | TR      | IRFR5505       | SEC        | SFR9034         | F.C     |
|                                     | "       | 2SJ246         | HITACHI    |                 |         |
| Q7,8,14,15                          | TR      | 2SC5103        | ROHM       | 2SD1803         | SANYO   |
|                                     | "       | KTC5103D       | KEC        |                 |         |
| D2,7,8,9,10,12,17,18,<br>19,20      | DIODE   | KDS184         | KEC        | DAN202K         | ROHM    |
|                                     |         | SDS2838        | AUK        |                 |         |
| D3,13                               | DIODE   | SS33&SS34      | G.I        | SK33/SK34       | PANJIT  |
| D22                                 | "       | KDS181         | KEC        | DAP202K         | ROHM    |
| D23                                 | ZENER " | 5.6Y           | KEC        | 5.6B            | ROHM    |
| D4,5,6,14,15,16                     | "       | KDS226         | KEC        | DAN217          | ROHM    |
|                                     | "       | SDS7000        | AUK        |                 |         |
| C3                                  | C-ELEC  | LXZ470uF/25V   | SAMYUNG    |                 |         |
| C5,14                               | FILM    | MPPS2A304K     | SUNGHO     | MMX-E-2A304K    | HITACHI |
| C6,7,15,16                          | C-CERA  | C4520CH3F220K  | TDK        | CF42CG220J3000B | AVX     |
|                                     | "       | C1808N220J302T | HOLY STONE |                 |         |
| C2,C13,22,25                        | MLCC    | CL21C102JBN    | SEMCO      |                 |         |
| C1,12,21,23,24                      | "       | CL21B104KBN    | "          |                 |         |
| C10,19                              | TANTAL  | 10uF/6.3V      | "          |                 |         |
| C8,9,11,17,18,20                    | MLCC    | CL21F105ZAN    | "          |                 |         |
| R2,27,54                            | CHIP-R  | RC2012J153     | SEMCO      |                 |         |
| R1                                  | "       | RC2012J183     | "          |                 |         |
| R4                                  | CHIP-R  | RC2012J393     | SEMCO      |                 |         |
| R10,36,62,65,83,R30,<br>31,56,56,57 | "       | RC2012J103     | "          |                 |         |
| R5                                  | "       | RC2012J243     | "          |                 |         |
| R6                                  | "       | RC2012J135     | "          |                 |         |
| R19,20,45,46                        | "       | RC3216J911     | "          |                 |         |
| R11~14,37~40,84                     | "       | RC3216J471     | "          |                 |         |
| R8,34                               | "       | RC2012J472     | "          |                 |         |
| R9,35                               | "       | RC2012J433     | "          |                 |         |

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| SYMBOL                | NAME      | 1st            |          | 2nd            |         |
|-----------------------|-----------|----------------|----------|----------------|---------|
|                       |           | TYPE NO        | MAKER    | TYPE NO        | MAKER   |
| R21,22,47,48,63,66    |           | RC2012J364     |          |                |         |
| R 3,23,24,49,50,81,82 | "         | RC2012J563     | "        | "              |         |
| R25,52                | "         | RC2012J362     | "        | "              |         |
| R26,53                | "         | NO MOUNT       | "        | "              |         |
| R28                   | "         | RC2012J272     | "        | "              |         |
| R29,55                | "         | RC2012J203     | "        | "              |         |
| R71~78                | "         | RC3216J204     | "        | "              |         |
| R61,64                |           | RC2012J302     |          |                |         |
| R100                  | VR        | 100kΩ          | "        |                |         |
| T1,4                  | TRANS     | TM511R         | NAMYANG  | TM511R         | DAESUNG |
|                       | "         | TM511R         | KYUNGIN  |                |         |
| T2,3                  | TRANS     | TM511          | NAMYANG  | TM511          | DAESUNG |
|                       | "         | TM511          | KYUNGIN  |                |         |
| L1,2                  | COIL      | KEL47          | KYUNGIN  | KEL47          | NAMYANG |
| F1                    | FUSE      | SSQ3           | BEL      | 451003         | LITTEL  |
| CN1                   | CONNECTOR | 12505WR-12A00  | YEONHO   | 53261-1290     | MOLEX   |
| CN2,3,4,5             | CONNECTOR | 35001WR-02P    | YEONHO   | SM02B-BHS      | JST     |
| PCB                   | PCB       | SIC1802 Rev0.1 | YOUNGEUN | SIC1802 Rev0.1 | KIJOO   |
| ADHENSIVE             |           | KE40RTV        | SHINETSU |                |         |

## 8.0 RELIABILITY SPECIFICATION

| NO | ITEM                                          | CONDITION AND METHOD                                                                          |
|----|-----------------------------------------------|-----------------------------------------------------------------------------------------------|
| 1  | HIGH TEMPERATURE STORAGE TEST                 | TEMP.;70 , DURATION: 500 hrs                                                                  |
| 2  | LOW TEMPERATURE STORAGE TEST                  | TEMP.;40 , DURATION: 500 hrs                                                                  |
| 3  | HIGH TEMPERATURE HIGH HUMIDITY STORAGE TEST   | TEMP.;40 , HUMIDITY:95%RH DURATION: 500 hrs                                                   |
| 4  | HIGH TEMPERATURE HIGH HUMIDITY OPERATION TEST | TEMP.;40 , HUMIDITY:95%RH DURATION: 1000 hrs                                                  |
| 5  | THERMAL SHOCK TEST                            | TEMP; -30 ↔ 70 , 250 CYCLE<br>(30 MINUTE), (30 MINUTE)                                        |
| 6  | VIBRATION TEST                                | AMPLITUDE;1.5mm, FEEQUENCY;10~55Hz, POSITION;<br>TREE PERPENDLCULAR PLANES, DURATION;1000 hrs |
| 7  | HIGH TEMPERATURE OPERATION TEST               | TEMP;50 DURATION;72 hrs                                                                       |
| 8  | LOW TEMPERATURE OPERATION TEST                | TEMP; 0 DURATION;72 hrs                                                                       |

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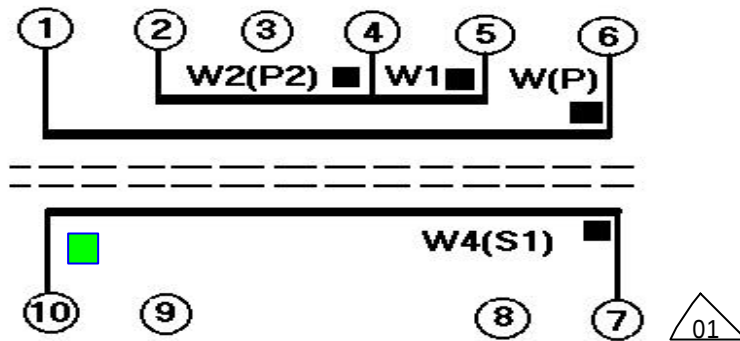


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## 9.0 DETAIL SPECIFICATION FOR KEY PARTS

### 9.1 TRANS (TM-511R, TM-511) 01

#### 9.1.1 WINDING SPEC & ELECTRICAL CHARACTERISTICS



| SYMBOL& WINDING | WIRE        | TURNS         | INDUCTANCE            | CONDITION     |
|-----------------|-------------|---------------|-----------------------|---------------|
| W1 (#5-#4)      | 2UEW 0.30 ¢ | 8             | #5-#2:<br>41.0uH ±10% | AT 1KHZ 1Vrms |
| W2 (#4-#2)      | 2UEW 0.30 ¢ | 8             |                       |               |
| W3 (#6-#1)      | 2UEW 0.15 ¢ | 2             | 0.6uH ref.            |               |
| W4 (#7-#10)     | 2UEW 0.04 ¢ | 1,440 (288*5) | 360mH ± 10%           |               |

#### 9.1.2 MATERIAL LIST (TM-511R) 02

| NO. | COMPONENT        | MANUFACTURE COMPONENT                         | NAME OF MATERIAL                                                       | MANUFACTURER OF MATERIAL    | UL FILE NO. |
|-----|------------------|-----------------------------------------------|------------------------------------------------------------------------|-----------------------------|-------------|
| 1   | CORE             | SAM SUNG CORNING CO., LTD.                    | SL-2<br>EEA 17.7A                                                      |                             |             |
| 2   | BOBBIN           | JO KWANG ELECTRONICS CO., LTD.                | (94V-0) SB EE18-2<br>LCP UL                                            | SUMITOMO CHEMICAL CO., LTD. | E 54705 (M) |
| 3   | WIRE             | DONG YANG ELECTRONICS IND CO., LTD.           | 2 EW 0.15Ø<br>(AWG #35)                                                |                             | E 102761(S) |
| 4   |                  |                                               | 2 UEW 0.30Ø<br>(AWG #29)                                               |                             |             |
| 5   |                  |                                               | F UEW 0.04Ø<br>(AWG #44)                                               |                             |             |
| 6   | INSULATION TAPE  | DUCK SUNG TAPE CO., LTD.<br>(Cat No. DTS-204) | POLYESTER FILM TAPE<br>0.025 mm X 13.5 mm                              |                             | E 105147(S) |
| 7   | CORE FIXING TAPE |                                               | POLYESTER FILM TAPE<br>0.025 mm X 5.0 mm                               |                             |             |
| 8   | INSULATOR        | SKC LTD                                       | PETP FILM ( <span style="color: blue;">SR55</span> )<br>0.075mm(T) MIN |                             | E 74359 (S) |
| 9   | WAX              | MICRO WAX 180                                 | MOBIL or ESSO                                                          |                             |             |



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### 9.2 DETAIL MATERIAL LIST FOR KEY PARTS ( SAFETY )

| SYMBOL         | NAME                    | TYPE NO.        | MANUFACURER                   | DESCRIPTION                                |
|----------------|-------------------------|-----------------|-------------------------------|--------------------------------------------|
| FI             | FUSE                    | 451003          | LITTELFUSE INC                | UL FILE NO :E10480<br>CSA FILE NO :LR29862 |
|                |                         | SSQ3            | BEL                           | UL FILE NO :E20624<br>CSA FILE NO :LR39772 |
| PCB            | PRINTED<br>WIRING BOARD | FR- 4           | KIJOO                         | UL FILE NO :E111636                        |
|                |                         |                 | YOUNG EUN<br>ELECTRONICS      | UL FILE NO:E173507                         |
| CN1            | CONNECTOR               | 53261 - 1290    | MOLEX                         | NYLON 4/6 UL94V-0                          |
|                | "                       | 12505WR - 12A00 | YEONHO                        | "                                          |
| CN2,3<br>CN4,5 | CONNECTOR               | SM02B - BHS     | JST                           | PA46 UL94V-0                               |
|                | "                       | 35001WR - 02P   | YEONHO                        | "                                          |
|                | INSULATOR               | PC              | TEIJIN CHEMICALS              | UL FILE NO:E50075(M)                       |
| T1,4           | TRANSFORMER             | TM-511R         | DAISUNG<br>TELECOMMUNICATIONS | CLASS A (105 de.C)<br>SEE TRANS SPEC       |
|                |                         |                 | NAMYANG<br>ELECTRONICS        | CLASS A (105 de.C)<br>SEE TRANS SPEC       |
|                |                         |                 | KYUNGIN<br>ELECTRONICS        | CLASS A (105 de.C)<br>SEE TRANS SPEC       |
|                |                         |                 | DAISHIN DENKEN                | CLASS A (105 de.C)<br>SEE TRANS SPEC       |
| T2,3           | TRANSFORMER             | TM-511          | DAISUNG<br>TELECOMMUNICATIONS | CLASS A (105 de.C)<br>SEE TRANS SPEC       |
|                |                         |                 | NAMYANG<br>ELECTRONICS        | CLASS A (105 de.C)<br>SEE TRANS SPEC       |
|                |                         |                 | KYUNGIN<br>ELECTRONICS        | CLASS A (105 de.C)<br>SEE TRANS SPEC       |
|                |                         |                 | DAISHIN DENKEN                | CLASS A (105 de.C)<br>SEE TRANS SPEC       |

### 10.0 PACKING REQUIREMENTS

BULK



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| SAMSUNG P/N                                                                         | VENDOR #1 P/N                                      | VENDOR #2 P/N | VENDOR #3 P/N | VENDOR #4 P/N     |
|-------------------------------------------------------------------------------------|----------------------------------------------------|---------------|---------------|-------------------|
| BN44-00038A                                                                         | SIC1802                                            |               |               |                   |
|                                                                                     |                                                    |               |               |                   |
|                                                                                     |                                                    |               |               |                   |
|                                                                                     |                                                    |               |               |                   |
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|                                                                                     |                                                    |               |               |                   |
|                                                                                     |                                                    |               |               |                   |
|                                                                                     |                                                    |               |               |                   |
| VENDOR #1                                                                           | SAMSUNG ELECTRO-MECHANICS CO.,LTD.                 |               |               |                   |
| VENDOR #2                                                                           |                                                    |               |               |                   |
| VENDOR #3                                                                           |                                                    |               |               |                   |
| VENDOR #4                                                                           |                                                    |               |               |                   |
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